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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,286	08/20/2001	Stanislaw D. Augustynowicz	KSC-12092	8057
7590	11/24/2004		EXAMINER	CHEVALIER, ALICIA ANN
Randall M. Heald Patent Counsel NASA, John F. Kennedy Space Center Mail Code: CC-A Kennedy Space Center, FL 32899			ART UNIT	PAPER NUMBER
			1772	
DATE MAILED: 11/24/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	09/939,286	AUGUSTYNOWICZ ET AL.
	<b>Examiner</b> Alicia Chevalier	<b>Art Unit</b> 1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 02 September 2004.
- 2a) This action is **FINAL**.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-4,8 and 10-37 is/are pending in the application.
- 4a) Of the above claim(s) 17-35 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-16,36 and 37 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All
  - b) Some \*
  - c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

## **RESPONSE TO AMENDMENT**

### ***Request for Continued Examination***

1. The Request for Continued Examination (RCE) under 37 CFR 1.53 (d) filed on September 20, 2004 is acceptable and a RCE has been established. An action on the RCE follows.
2. Claims 1-4, 8 and 10-37 are pending in the application, claims 17-35 are withdrawn from consideration. Claims 5-7 and 9 have been cancelled.
3. Amendments to the claims, filed on September 20, 2004, have been entered in the above-identified application.

### ***REJECTIONS***

4. **The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.**

### ***Claim Rejections - 35 USC § 103***

5. Claims 1-4, 8, 10, 11 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pogorski et al. (U.S. Patent No. 6,221,456) in view of Barito et al. (U.S. Patent No. 4,636,415).

Pogorski discloses a thermal insulation to decrease the transfer of heat into or from an insulated system to order to protect a device, such as an appliance, vessel, pipeline or other apparatus, from the effects of a gain or loss of heat from or to the outside environment (*col. 1,*

*lines 18-24).* The insulation panels may be used in a variety of end-uses, e.g. in freezers, refrigerators, hot water heaters, and other domestic or institutional appliances, for insulating vessels and pipes and for special building applications (*col. 8, lines 20-26*).

Regarding Applicant's claims 1-3 and 8, Pogorski discloses a thermal insulation system (*thermal insulation panel, title*) comprising as least one flexible insulating layer (*col. 6, lines 29-30*) that is conformable to three-dimensional surfaces of an object to be insulated (*col. 8, lines 9-10*). The insulating layer comprises a reflection layer (*outer gas-impermeable envelope, col. 6, lines 21-27*), a carrier layer (*inner gas-permeable envelope, col. 6, lines 33-36*) and a fill layer (*fine particles, col. 5, line 47*). The reflection layer is deemed to have first surface and a second surface and is formed of a material selected from a group consisting of metal foils and metallized foils (*aluminum or stainless steel foil, col. 6, lines 21-27*). The carrier layer is formed of a low thermal conductivity material selected from a group consisting of microglass, paper, fabric, polyester fabric and Q-fiber fabric (*woven fibers, i.e. fabric, col. 6, lines 33-36*). The fill layer is located between the carrier layer and the first surface of the reflection layer (*figure 1*) and containing powder (*fine particles, col. 5, line 47*).

Pogorski fails to disclose that the powder has a compressed density of approximately 1 to 10 times a bulk density of the powder, a surface area of approximately 10 to 1,100 m<sup>2</sup>/g of powder, bulk density of less than approximately 4lb<sub>m</sub>/ft<sup>3</sup> or is silica.

Barito discloses insulation material for refrigeration structures (*col. 1, line 5*).

Barito discloses using powdered silica in the core of an insulating material to provide thinner insulation with the same or better insulting efficiency as thicker prior art insulations (*col. 2, lines 21-26*). The powder has a surface area of at least 150 m<sup>2</sup>/g (*col. 3, line 9*), a compressed

density in the range from about 10 to 20 pounds per cubic foot (*col. 3, lines 37-40*), and a bulk density of 3 to 4 pounds per cubic foot (*col. 5, lines 52-53*). From the ranges of the compressed and bulk densities it can be seen that the compressed density is approximately 1 to 10 times the bulk density of the powder.

Pogorski and Barito are analogous because they both disclose insulation material/panels.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the silica powder of Barito which has a compressed density of approximately 1 to 10 times a bulk density of the powder, a surface area of approximately 10 to 1,100 m<sup>2</sup>/g of powder and a bulk density of less than approximately 4lb<sub>m</sub>/ft<sup>3</sup> as the fine particles of Pogorski in order to provide thinner insulation.

One of ordinary skill in the art would have been motivated to use the silica powder of Barito as the fill layer powder in Pogorski because it would allow the insulation to be thinner yet still have the same or better insulating efficiency as thicker prior art insulations (*Barito col. 2, lines 21-26*).

It is desirable to have thinner insulation in order to reduce the over all bulk to conserve space.

Regarding Applicant's claim 4, Pogorski discloses that the powder is contained on a carrier layer, since the reference teaches that the inner gas-permeable envelope encloses a fill layer consisting of a plurality of coarse granules and fine particles (*col. 5, lines 45-47*).

Regarding Applicant's claim 10, while Pogorski does not disclose the thickness of the combination of said fill layer and said carrier layer has a thickness of approximately 0.002 to

0.20 inches, he does disclose that heat flow through insulation can be reduced by reducing the thickness (*col. 2, lines 49-53*).

Therefore, the exact thickness of the combination of said fill layer and said carrier layer is deemed to be a result effective variable with regard to the heat flow through the insulation. It would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as thickness of the fill layer and inner envelope through routine experimentation in the absence of a showing of criticality in the claimed thickness. *In re Boesch*, 205 USPQ 215 (CCPA 1980), *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990). One of ordinary skill in the art would have been motivated reduce the thickness to approximately 0.002 to 0.20 inches in order to reduce the heat flow through the insulation. One would have been motivated to reduce the heat flow through the insulation because it would decrease the transfer of heat into or from an insulated system and protect the device being insulated from the effects of a gain or a loss of heat from or to the outside environment (*col. 1, lines 18-24*).

Regarding Applicant's claim 11, Porgorski discloses the thermal insulation system further comprises an outer casing surrounding the at least one flexible insulating layer, since the reference teaches that the outer envelope of the panel may be covered by a protective plastic foam to provide protection against a rupture of the outer envelope due to external causes (*col. 6, lines 45-47*).

Regarding Applicant's claim 36, neither Porgorski or Barito specifically disclose that the thermal conductivity coefficient k value of the thermal insulation system is approximately 0.09 mW/m-K at below about  $1 \times 10^{-4}$  torr and approximately 2.4 mW/m-K at approximately 1 torr, for insulation having an approximately one inch thickness and boundary conditions of 77K and

Art Unit: 1772

290K. However, the presently claimed thermal conductivity coefficient k would have necessarily been present and is expected in the system because of the use of similar materials (i.e. a fabric carrier layer, silica powder fill layer, and a metal reflective layer), absent evidence showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

6. Claims 12-16 and 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pogorski in view of Barito as applied above, and further in view of Karpinski (U.S. Patent No. 4,304,824) and Cur et al. (U.S. Patent No. 5,082,335).

Regarding claims 12 and 13, the combination of Pogorski and Barito discloses a thermal insulation system comprising as least one flexible insulating layer that is conformable to three-dimensional surfaces of an object to be insulated. The insulating layer comprises a reflection layer, a carrier layer and a fill layer. The reflection layer is deemed to have first surface and a second surface and is formed of a material selected from a group consisting of metal foils and metalized foils. The carrier layer is formed of a low thermal conductivity material selected from a group consisting of microglass, paper, fabric, polyester fabric and Q-fiber fabric. The fill layer is located between the carrier layer and the first surface of the reflection layer and containing powder with a compressed density of approximately 1 to 10 times a bulk density of the powder. See above.

The combination of Pogorski and Barito fail to disclose at least one edge strip adjacent the fill layer and interposed between the carrier layer and the reflection layer and at least one intermediate strip interposed between the carrier layer and the reflection layer, wherein the

Art Unit: 1772

intermediate strip separates sections of the fill layer. The combination of Pogorski and Barito also fail to disclose plurality of insulating layers adjacently disposed.

Karpinski discloses a flexible modular insulation (*title*) comprising a first flexible laminate film, pellets, and a second flexible laminate (*figure 1*). In order to provide for the manufacture of large sections of insulation and to prevent the destruction of the insulative qualities of an entire panel due to accidental tears of the laminate flexible film, an alternative embodiment shown in figure 3 is preferable (*col. 2, lines 64-68*). A large grid sheet (*figure 3*) with edge strips and intermediate strips, create a plurality of isolated groupings of pellet of the insulating material (*col. 3, lines 1-8*).

Pogorski, Barito, Cur and Karpinski are analogous because they all disclose insulation material/panels.

It would have been obvious to one of ordinary skill in the art at the time of the invention to large grid sheet of Karpinski to the fill layer of Pogorski and Barito in order to create a plurality of isolated groupings of particles.

One of ordinary skill in the art would have been motivated to create the isolated groups of particles because it would provide for the manufacture of large sections of insulation and to prevent the destruction of the insulative qualities of an entire panel due to accidental tears of the laminate.

Cur discloses an insulation panel for a refrigerator where a plurality of panels are used to enhance the insulation property of the insulation system (*col. 4, lines 16-24*).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a plurality of Pogorski and Barito's panels as taught by Cur in order to enhance the insulation property of the insulation system (*Cur col. 4, lines 16-24*).

Regarding Applicant's claim 14, Porgorski discloses the thermal insulation system further comprises an outer casing surrounding the at least one flexible insulating layer, since the reference teaches that the outer envelope of the panel may be covered by a protective plastic foam to provide protection against a rupture of the outer envelope due to external causes (*col. 6, lines 45-47*).

Regarding Applicant's claim 15, the combination of Pogorski, Barito, Karpinski and Cur disclose that the carrier layer or a first flexible insulating layer is the reflection layer of an adjacent flexible insulating layer.

Regarding Applicant's claim 16, while Porgorski does not discloses the thickness of the combination of said fill layer and said carrier layer has a thickness of approximately 0.002 to 0.20 inches, he does disclose that heat flow through insulation can be reduced by reducing the thickness (*col. 2, lines 49-53*).

Therefore, the exact thickness of the combination of said fill layer and said carrier layer is deemed to be a result effective variable with regard to the heat flow through the insulation. It would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as thickness of the fill layer and inner envelope through routine experimentation in the absence of a showing of criticality in the claimed thickness. *In re Boesch*, 205 USPQ 215 (CCPA 1980), *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990). One of ordinary skill in the art would have been motivated reduce the thickness to approximately

0.002 to 0.20 inches in order to reduce the heat flow through the insulation. One would have been motivated to reduce the heat flow through the insulation because it would decrease the transfer of heat into or from an insulated system and protect the device being insulated from the effects of a gain or a loss of heat from or to the outside environment (*col. 1, lines 18-24*).

Regarding Applicant's claim 37, neither Porgorski or Barito specifically disclose that the thermal conductivity coefficient k value of the thermal insulation system is approximately 0.09 mW/m-K at below about  $1 \times 10^{-4}$  torr and approximately 2.4 mW/m-K at approximately 1 torr, for insulation having an approximately one inch thickness and boundary conditions of 77K and 290K. However, the presently claimed thermal conductivity coefficient k would have necessarily been present and is expected in the system because of the use of similar materials (i.e. a fabric carrier layer, silica powder fill layer, and a metal reflective layer), absent evidence showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

#### ***ANSWERS TO APPLICANT'S ARGUMENTS***

7. Applicant's arguments in the response filed June 7, 2004 regarding the 35 U.S.C. 103 rejection over Pogorski in view of Barito of record have been carefully considered but are deemed unpersuasive.

Applicant argues that in the instant invention the fill layer is located physically between the reflection layer and the carrier layer, which is not taught in Pogorski. Rather Pogorski clearly teaches that the granules are enclosed within the inner envelope and not between inner and outer envelopes.

The Examiner respectfully disagrees with this interpretation of Pogorski in view of the claim language. Claim 1 recites "a fill layer located between the carrier layer and the first surface of the reflection layer." As seen from figure 1, the enveloped structure of Pogorski's insulation panel sets up a layered structure. The layers of the panel being a first reflective layer (*top half of the outer envelope*), a first carrier layer (*top half of the inner envelope*), the fill layer (*granules*), second carrier layer (*bottom half of the inner envelope*) and a second reflective layer (*bottom half of the outer envelope*). Therefore, Pogorski meets Applicant's claim language since the fill layer is between the first reflective layer and the second carrier layer. The fact that Pogorski discloses additional structure not required by Applicant's invention is irrelevant since Applicant uses open language, i.e. comprising, and does not claim that the fill layer is directly adjacent both the carrier layer and the reflection layer.

8. Applicant's arguments in response filed June 7, 2004 regarding the 35 U.S.C. 103 rejection over Pogorski in view of Barito and Karpinski of record have been considered but are moot due to the new grounds of rejection.

### ***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia Chevalier whose telephone number is (571) 272-1490. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (571) 272-1498. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1772

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Alicia Chevalier

11/19/04